CLAIMS

1. A tire (1, 101) for vehicles having a curvature ratio not greater than 0.1, comprising:

- a carcass structure (2) including a central crown portion (3) and two sidewalls (4, 5) ending in a couple of beads (9, 10) for anchoring to a rim (11) of a wheel;

- a belt structure (12), coaxially associated to the carcass structure (2);

- a tread (14), coaxially extending around the belt structure (12), on the tread being defined:

  i) an equatorial zone (E) extending on either side of the equatorial plane (Y-Y) of the tire (1, 101), and

  ii) two shoulder zones (F, G) in axially opposite positions with respect to said equatorial zone;

said tread (14) comprising a plurality of transversal grooves (15) including a first shoulder portion (16) and a second equatorial portion (17),

characterized in that said transversal grooves (15) are circumferentially distributed along the tread (14) in groups alternately extending from said shoulder zones (F, G) of the tread (14), said groups of grooves (15) defining in the equatorial zone (E) of the tread (14) a plurality of substantially continuous portions (18) of the tread (14) ending at the equatorial portion (17) of a same transversal groove (15) of the axially opposed group of grooves (15).

2. The tire (1, 101) according to claim 1, characterized in that the equatorial portion (17) of at least one of the transversal grooves (15) forms an angle (g) having a width comprised between 20° and 65° with respect to the equatorial plane (Y-Y) of the tire (1, 101).

3. The tire (1, 101) according to claim 1, characterized in that at least one of said transversal grooves (15) comprises an equatorial portion (17) extending on either side of the equatorial plane (Y-Y) of the tire (1, 101).

4. The tire (1, 101) according to claim 1, characterized in that at least one of said transversal grooves (15) comprises an equatorial portion (17) extending in a substantially rectilinear way within an equatorial half-zone (E/2) of the tread (14).

5. The tire (1, 101) according to claim 4, characterized in that at least one of said transversal grooves (15) comprises an equatorial portion (17) extending in a substantially rectilinear way at least partly within one of said shoulder zones (F, G) of the tread (14).

6. The tire (1, 101) according to claim 1, characterized in that in each of said groups the transversal grooves (15) comprise equatorial portions (17) at least partly substantially parallel to one another.

7. The tire (1, 101) according to claim 1, characterized in that the equatorial portions (17) of said groups of grooves terminate at a distance comprised between 0 mm and 50% of the mean pitch of the tread pattern from the equatorial portion (17) of the same transversal groove (15) of the axially opposite group of grooves (15).

8. The tire (1, 101) according to claim 1, characterized in that the equatorial portions (17) of the transversal grooves (15) is connected to said shoulder portion (16) by means of a substantially curvilinear intermediate portion (19) having a curvature radius (R) comprised between 30 and 60 mm.

9. The tire (1, 101) according to claim 1, characterized in that the shoulder portion (16) of at least one transversal groove (15) forms with the equatorial plane (Y-Y) of the tire (1, 101) an angle (b) having a width comprised between 85° and 95°.

10. The tire (1, 101) according to claim 1, characterized in that said transversal grooves (15) have a substantially constant width comprised between 5 and 10 mm along the tread (14) portion substantially corresponding to the straightway ground contacting area of the tire (1, 101).

11. The tire (1, 101) according to claim 1, characterized in that the shoulder portion (16) of the transversal grooves (15) comprises an end portion (20) having a width comprised between 40% and 60% of the maximum width of the transversal grooves (15).

12. The tire (1, 101) according to claim 11, characterized in that said end portion (20) substantially lies within the curve or drift ground contacting area of the tire (1, 101).

13. The tire (1, 101) according to claim 1, characterized in that each of said groups of grooves (15) comprises 3 to 7 transversal grooves (15).

14. The tire (1, 101) according to claim 1, characterized in that said transversal grooves

(15) have a depth comprised between 5 and 9 mm.

15. The tire (1, 101) according to claim 1, characterized in that the transversal grooves (15) of each of said groups are longitudinally staggered with respect to the grooves (15) of the axially opposite group by a distance equal to about 50% of the mean pitch of the tread pattern.

16. The tire (1, 101) according to claim 1, characterized in that the tread (14) further comprises a central depression (29) formed astride the equatorial plane (Y-Y) of the tire (1, 101), having a maximum depth comprised between 40% and 60% of the depth of the transversal grooves (15) and a width comprised between 15 and 25 mm.

17. The tire (1, 101) according to claim 1, characterized in that it further comprises a couple of longitudinal slots (21, 22) circumferentially extending on opposite sides of the equatorial plane (Y-Y) of the tire (1, 101) along said shoulder zones (F, G) of the tread (14).

18. The tire (1, 101) according to claim 1, characterized in that it further comprises a plurality of transversal notches (28) formed in said shoulder zones (F, G) of the tread (14) and interposed between adjoining transversal grooves (15), said notches (28) having a depth comprised between 3 and 4.5 mm and a width comprised between 2 and 3.5 mm.

19. The tire (1, 101) according to claim 1, characterized in that each of said groups comprises a plurality of grooves (15) having a length decreasing along the rolling direction (D) of the tire (1, 101).

20. The tire (1, 101) according to claim 1, characterized in that said substantially continuous portions (18) of the tread (14) terminate at the equatorial portion (17) of the transversal groove (15) having a prevailing length of the axially opposite group of grooves (15).

21. A tread (14) for vehicle tires, comprising a plurality of transversal grooves (15) including a first shoulder portion (16) and a second equatorial portion (17) formed in an equatorial zone (E) of the tread (14) extending on either side of the equatorial plane (Y-Y) of the tire (1, 101) and along at least one of two shoulder zones (F, G) defined on the tread (14) in axially opposite parts with respect to said equatorial zone (E),

characterized in that said transversal grooves (15) are circumferentially distributed in

groups alternately extending from said shoulder zones (F, G) of the tread (14), said groups of grooves (15) defining in the equatorial zone (E) of the tread (14) a plurality of substantially continuous portions (18) of the tread (14) terminating at the equatorial portion (17) of a same transversal groove (15) of the axially opposed group of grooves (15).

22. The tread (14) according to claim 21, characterized in that the equatorial portion (17) of at least one of the transversal grooves (15) forms an angle (g) having a width comprised between 20° and 65° with respect to the equatorial plane (Y-Y) of the tire (1, 101).

23. The tread (14) according to claim 21, characterized in that at least one of the transversal grooves (15) comprises an equatorial portion (17) extending on either side of the equatorial plane (Y-Y) of the tire (1, 101).

24. The tread (14) according to claim 21, characterized in that the equatorial portion (17) of the transversal grooves (15) is connected to said shoulder portion (16) by means of a substantially curvilinear intermediate portion (19) having a curvature radius (R) comprised between 30 and 60 mm.

25. The tread (14) according to claim 21, characterized in that the shoulder portion (16) of at least one transversal groove (15) forms with the equatorial plane (Y-Y) of the tire (1, 101) an angle (b) having a width comprised between 85° and 95°.

26. The tread (14) according to claim 21, characterized in that each of said groups of grooves comprises from 3 to 7 transversal grooves (15).

27. The tread (14) according to claim 21, characterized in that it further comprises a central depression (29) formed astride said equatorial plane (Y-Y), having a maximum depth comprised between 40% and 60% of the depth of the transversal grooves (15) and a width comprised between 15 and 25 mm.

28. The tread (14) according to claim 21, characterized in that each of said groups comprises a plurality of grooves (15) having a length decreasing along the rolling direction (D) of the tire (1, 101).

29. The tread (14) according to claim 21, characterized in that said substantially continuous portions (18) of the tread (14) terminate at the equatorial portion (17) of the transversal groove (15) having a prevailing length of the axially opposed group of

grooves (15).

30. A set of tires (1, 101), comprising a first couple of tires (101) adapted to be mounted on the front wheels of a vehicle and a second couple of tires (1) adapted to be mounted on the rear wheels of a vehicle, said first and second couple of tires (1, 101) comprising a first and, respectively, a second tread (14) on each of which are defined:

i) an equatorial zone (E) extending on either side of the equatorial plane (Y-Y) of the tire (1, 101), and

ii) two shoulder zones (F, G) in axially opposite positions with respect to said equatorial zone (E);

said first and second treads (14) being provided with a plurality of transversal grooves (15) including a first shoulder portion (16) and a second equatorial portion (17),

characterized in that:

1) in the front tires (101) said transversal grooves (15) are circumferentially distributed along the first tread (14) in groups alternately extending from opposite shoulder zones (F, G) of the tread (14), each of said groups including from 3 to 5 grooves (15),

2) in the rear tires (1) said transversal grooves (15) are circumferentially distributed along the second tread (14) in groups alternately extending from opposite shoulder zones (F, G) of the tread (14), each of said groups including from 5 to 7 grooves (15),

said groups of grooves (15) defining in the equatorial zone (E) of said first and second treads (14) a corresponding plurality of substantially continuous portions (18) of the tread (14) terminating at the equatorial portion (17) of a same transversal groove (15) of the axially opposite group of grooves (15).

31. The set of tires (1, 101) according to claim 30, characterized in that:

i) the equatorial portion (17) of at least one of the transversal grooves (15) of the first tread (14) forms an angle (g) substantially equal to 45° with respect to the equatorial plane (Y-Y) of the front tire (101),

ii) the equatorial portion (17) of at least one of the transversal grooves (15) of

the second tread (14) forms an angle (g) substantially equal to 30° with respect to the equatorial plane (Y-Y) of the rear tire (1).

32. The set of tires (1, 101) according to claim 30, characterized in that the front tire (101) has a chord shorter than the chord of the rear tire (1).

33. The set of tires (1, 101) according to claim 30, characterized in that the first tread (14) is provided with groups comprising three transversal grooves (15) and the second tread (14) is provided with groups comprising five transversal grooves (15).

34. The set of tires (1, 101) according to claim 30, characterized in that the first tread (14) further comprises a central depression (29) formed astride the equatorial plane (Y-Y) of the front tire (101).

35. The set of tires (1, 101) according to claim 34, characterized in that said central depression (29) has a depth comprised between 40% and 60% of the depth of the transversal grooves (15) and a width comprised between 15 and 25 mm.

36. The set of tires (1, 101) according to claim 30, characterized in that in at least one of the front (101) and rear (1) tires the shoulder portion (16) of the transversal grooves (15) comprises and end portion (20) having a reduced width comprised between 40% and 60% of the maximum width of the transversal grooves (15).

37. A method of optimizing the road behavior of a vehicle equipped with a set of tires (1, 101), comprising the following steps:

a) mounting on the front steering axis of the vehicle a couple of tires (101) comprising a first tread (14) allowing a substantially neutral behavior to lateral and longitudinal stresses and combinations thereof;

b) mounting on the rear and tractive axis of the vehicle a couple of tires (1) comprising a second tread (14) having a preferred releasing direction of longitudinal stresses with respect to lateral stresses.

38. The method according to claim 37, wherein:

a) each tread (14) comprises a plurality of transversal grooves (15) arranged in groups alternately extending from opposite shoulder zones (F, G) of each tread (14), said groups of grooves (15) defining in an equatorial zone (E) of each tread (14) a corresponding plurality of substantially continuous portions (18) terminating at the

equatorial portion (17) of a same groove (15) of the axially opposite group,

b) the first tread (14) comprises:

i) equatorial portions (17) of the transversal grooves (15) forming an angle (g) substantially equal to 45° with respect to the equatorial plane (Y-Y) of the tire (101),

ii) a central depression (29) formed astride the equatorial plane (Y-Y) of the tire (101), and

c) the second tread (14) comprises equatorial portions (17) of the transversal grooves (15) forming an angle (g) comprised between 30° and 50° with respect to the equatorial plane (Y-Y) of the tire (1).